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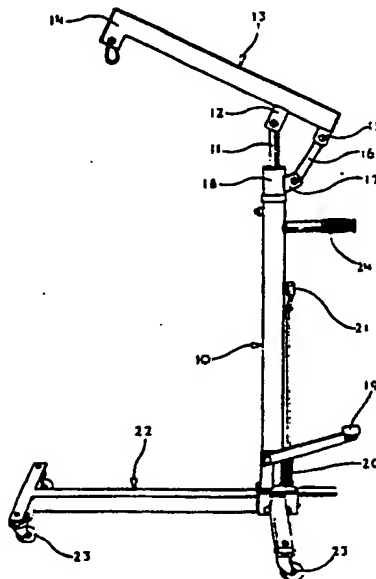
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(58) Field of search
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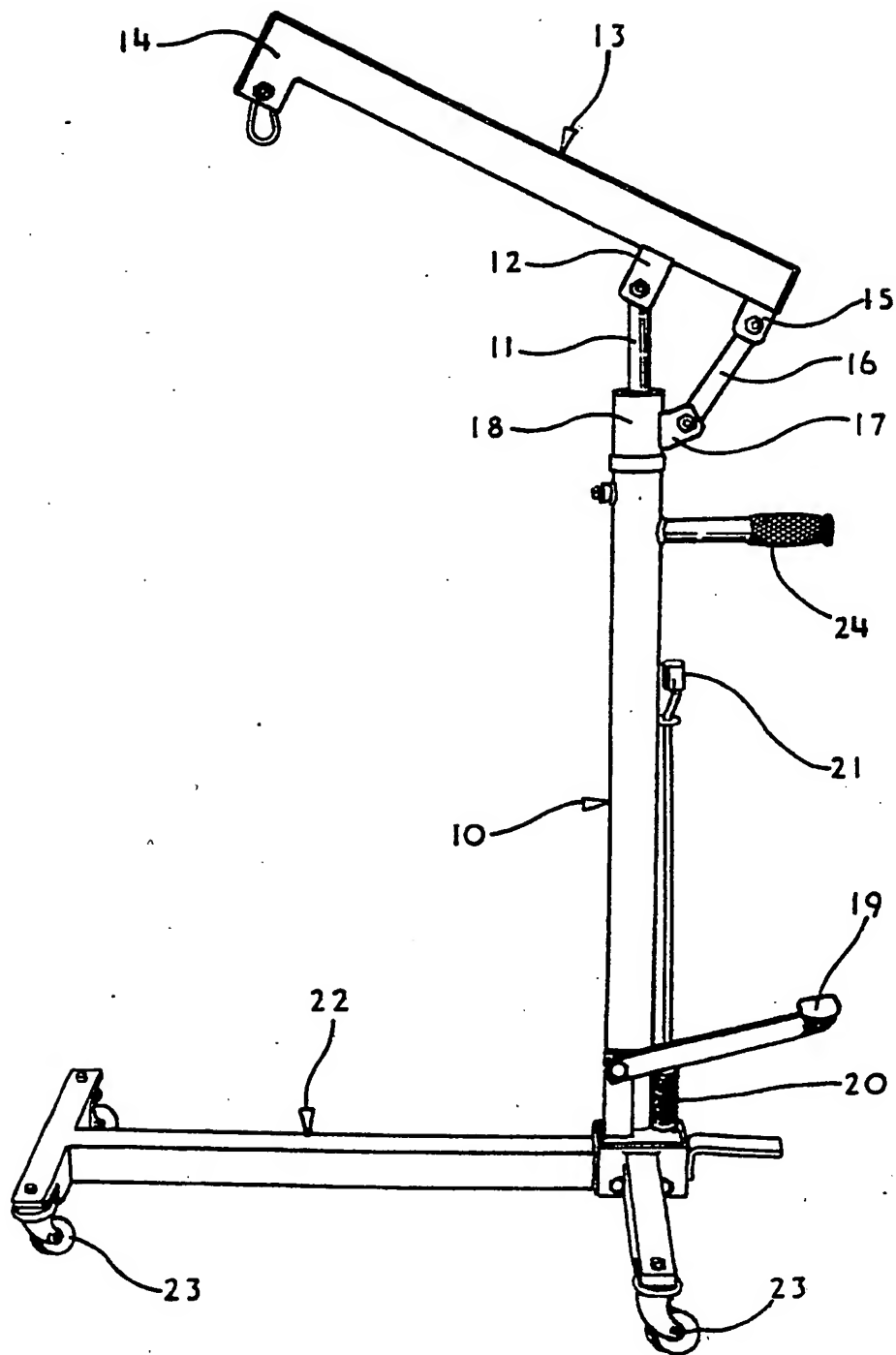
(54) Hoists, particularly for lifting disabled persons

(57) A hoist having an elongated mast 10, an arm 13 having means 14 for attachment on a sling, a linking member 16 so connected to the arm and to the mast as to be able to pivot relative to the arm and/or the mast, and lifting means operable to raise and lower the arm and connected to the arm in a region spaced along the arm from the linking member connection; the arrangement being such that the line of action of the lifting means coincides substantially with the axis of elongation of the mast.

Conveniently the lifting means is in the form of a piston and cylinder mechanism, with the piston 11 being connected at its one end 12 to the arm and the cylinder is in the form of a vertical tube which provides the mast.



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HOISTS, PARTICULARLY FOR LIFTING DISABLED PERSONS

Field of the Invention

This invention relates to hoists, particularly for lifting disabled persons.

5 It is a particular object of the present invention to provide an improved hoist for use in conjunction with the sling of patent application number 2 185 232.

Summary of the Invention

10 The present invention provides a hoist having an elongated mast, an arm having means for attachment of a sling, a linking member so connected to the arm and to the mast as to be able to pivot relative to the arm and/or the mast, and raising or lowering means operable to raise and lower the arm and connected to the arm in a region spaced along the arm from the linking member connection; the arrangement being such that the line of action
15 of the lifting means coincides substantially with the axis of elongation of the mast.

20 The lifting means is preferably in the form of a piston and cylinder mechanism, the piston being connected at its one end to the arm and the cylinder being in the form of a vertical tube which provides the mast, i.e. there is no separate mast and lifting means, the mast itself being the cylinder of the piston and cylinder mechanism.

The arm is preferably provided at its one end with the means for attachment of the sling and at its other end with the connection to the linking member, with the linking member being connected at its one end to the arm and at its other end to a collar at the upper end of the mast.

Provision may be made for rotation of the arm about the vertical axis of the mast and, in this event, the collar to which the linking member is attached will be arranged for rotation about said axis.

The hoist preferably has a base of generally T-shape in plan view with the mast extending upwardly from the junction between the stem and the cross-piece of the T. Castors are preferably provided at each of the free ends of the cross-piece and of the stem.

A foot-operated mechanism is preferably provided for extending the piston of the piston and cylinder mechanism and lifting the arm, a hand-operated valve member being provided for relieving the pressure within the cylinder to allow downward movement of the piston, the controls for the hoist being such as to facilitate operation by a single person.

Brief Description of the Drawing

The single Figure of the accompanying drawing is a side view of the hoist.

Description of the Preferred Embodiment

The hoist shown in the drawing includes a vertical mast 10, which mast 10 is in the form of a cylinder of a piston and cylinder mechanism, the piston 11 of which is arranged for vertical movement within the cylinder 10 so as to project a

controlled amount from the upper end of the cylinder 10. At its upper end, the piston 11 is pivotally connected to a lug 12 of an arm 13, the arrangement being such that, when the piston 11 is in its retracted condition, the arm 13 extends substantially horizontally.

At its one end, the arm 13 terminates in a mounting 14 which provides for the attachment of a sling constructed as shown in Figure 6 of the drawings of patent application number 2 185 232. At its other end, the arm 13 carries a lug 15 to which is attached a linking member 16, the linking member 16 being pivotally connected at its one end to the lug 15 and at its other end to a lug 17 provided on a collar 18 at the upper end of the cylinder providing the mast 10.

As the piston 11 is moved upwardly relative to the cylinder 10, the arm 13 will be caused to pivot relative to the piston 11 in a clockwise direction as viewed in the drawing, the linking member 16 serving to ensure that the axis of pivotal connection between the lug 15 and the linking member 16 moves about an arcuate path centred on the axis of pivotal connection between the linking member 16 and the lug 17 carried by the collar 18. Thus, the linking member 16 serves not only as a stabilizing element to prevent inadvertent rocking or tilting of the arm 13 but it also provides a multiplying factor permitting relatively rapid lifting of a person carried by a sling attached to the hoist.

Adjacent the base of the mast 10, there is a foot-operable pedal 19 and the arrangement is such that, as the pedal 19 is pumped downwardly against the action of a spring 20, this serves to increase the hydraulic pressure within the cylinder within the mast 10 to effect extension of the piston 11. The hydraulic control system of the piston and cylinder mechanism also includes a manually operable lever 21 which can be swung about a vertical

axis between a closed position in which the piston 11 will remain in the position into which it has been moved, and a fully open position in which the pressure within the cylinder is relieved and relatively rapid retraction of the piston 11 can be effected.

5 The hand-operated lever 21 can also be set in any required intermediate position to provide for less rapid lowering of the arm 13.

10 The hoist includes a generally T-shaped base 22 with casters 23 provided at the ends of the cross-piece of the T and at the free end of the stem of the T, the hoist also being provided with a hand grip 24 which projects from the mast 10 adjacent the collar 18, the hand grip 24 serving to facilitate manual manoeuvring of the hoist in, for example, a bathroom.

15 The hoist of the present invention provides, in a particularly simple and economical manner, for the lifting of a person carried by a sling suspended from the hoist, the hoist and the person carried by the sling being so designed that it is possible for a single person to wheel the hoist from place to place even when a relatively heavy person is being carried.

20 In a modification to the hoist shown in the drawing, the collar 18 is arranged for rotation relative to the mast 10 about a vertical axis and the connection between the piston 11 and the lug 12 is in the form of a ball and socket joint. With this arrangement, the arm 13 can then be swung about a vertical axis relative to the mast 10. This will be of great assistance in facilitating movement of a person into or out of a bed or a bath.

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CLAIMS:

1. A hoist having an elongated mast, an arm having means for attachment on a sling, a linking member so connected to the arm and to the mast as to be able to pivot relative to the arm and/or the mast, and raising or lowering means operable to raise and lower the arm and connected to the arm in a region spaced along the arm from the linking member connection; the arrangement being such that the line of action of the lifting means coincides substantially with the axis of elongation of the mast.
2. A hoist according to claim 1 in which the lifting means is in the form of a piston and cylinder mechanism.
3. A hoist according to claim 2 in which the piston is connected at its one end to the arm and the cylinder is in the form of a vertical tube which provides the mast.
4. A hoist according to claim 1 in which the arm is provided at its one end with the means for attachment of the sling and at its other end with the connection to the linking member.
5. A hoist according to claim 4 in which the linking member is connected at its one end to the arm and at its other end to a collar at the upper end of the mast.
6. A hoist according to claim 5 in which provision is made for rotation of the arm about the vertical axis of the mast and in which the collar is arranged for rotation about said axis.
7. A hoist according to claim 1 which has a base of generally T-shape in plan view with the mast extending upwardly from the junction between the stem and the cross-piece of the T.

8. A hoist according to claim 7 in which castors are provided at each of the free ends of the cross-piece and of the stem.

5 9. A hoist according to claim 3 in which a foot-operated mechanism is provided for extending the piston and lifting the arm.

10. A hoist according to claim 9 in which a hand-operated valve is provided for relieving the pressure within the cylinder to allow downward movement of the piston.

10 11. A hoist for use in conjunction with a sling for lifting a disabled person substantially as hereinbefore described with reference to the accompanying drawing.